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ABSTRACT

The paper urges educators to take a renewed view of the problems and implications associated with auditory impairment in the student. Helping a child learn to utilize incoming information efficiently is seen as a problem of management. The processing of auditory information is briefly considered in the determination of what is entailed in the management of learning processes. Educators of the deaf are advised to evaluate each part of the mediating process which occurs between stimuli reception and subsequent behavior to insure that no obstacles to learning remain unidentified. It is said that the answer to the question of why a child cannot hear must consider such aspects of perception as a signal reception, signal analysis and acceptance, signal retention, signal synthesis and integration, and signal convergence and divergence. After this attention to auditory processing, appropriate rehabilitative educational programs can then be developed. (KW)

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AUDITORY PROCESSING

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Because of the relatively quiet, non-violent revolution in education which has been occuring in the United States over the past ten years, all educators have been confronted with the need to question their programs, to consider whether asking different questions might result in elimination of problems which have been recognized for a long time, seeking an answer to the question "what has been keeping us from doing a better job?" This question is particularly provocative in regard to the child with an auditory impairment.

Any vigorous society or organization must have within its structure the capacity to renew effort to solve old problems. (Gardner, 1965) We need to take a renewed view of the problems associated with auditory impairment, a new look at the children for whom we want to develop excellent programs. There is an expression: architects cover their mistakes with ivy, doctors with earth, brides with a sauce. Perhaps we should add to this, educators of the deaf cover their errors with good intentions. In this age of accountability, we know good intentions are not enough. We have to uncover the obstacles, remove the obscuring labels of "deafness", "hearing loss", "hard of hearing", to reconsider the implications of auditory impairment.

We know there are a variety of ways to describe auditory functioning or malfunctioning. We can say a child is not able to hear, referring to an anatomical lesion. We might say, he is not willing to hear; there have been many pages of print, numerous hours of diagnosis and discussion worrying

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about the child who for emotional or psychogenic difficulties is tuned out of his auditory world. We could also consider the child who is not efficient in his use of acoustical signals for physiological reasons. The child described in this fashion is one about whom meaningful questions might be asked.

Most, if not all, educators are well aware of the implications of the need not to describe children with any stultifying label. Instead of talking about children who are "deaf", it is more useful to talk about children for whom hearing or listening is difficult. This is an advantage as it mandates questions that can lead to useful answers. For example, if a child is not able to utilize incoming information with efficiency, why not?

At the time we may feel we know all the answers, it is important to change the questions. This is a symptom of a self renewing society which adapts itself to the need to balance mature competence and wisdom with a system to insure continuous innovation in order to meet the challenge of problems.

Asking a different set of questions, or at least posing them differently so they will logically lead to different answers then, can serve as a guide to establish programs, set objectives, make decisions, motivate, communicate, organize materials and techniques, and measure progress; in short, help us as we manage the learning processing for each of the children for whom we are responsible.

A Problem of Management

Looking at a child's learning in this way means, first of all, that it is necessary to take a good look at the overall learning environment

and implement what is known about management; we must consider the deaf educator's role as that of a manager of the learning process and analyze the important movements and operations which comprise the art of management. We know: (1) an aspect of management is to organize physical setting in such a way that the job to be done will be easier; (2) the relationships between people, the speaker and listener, need study; personal interaction between adult and child may make more of a difference than any other factor we might consider. Equipment, materials, guidelines, developmental norms, etc. are not as crucial a factor for learning as person-to-person interaction, (Harlow, 1971); and (3) the stimuli to which the child is exposed will need analysis, its organization, timing and availability.

With that as an overview, let us consider what this type of analysis, the problem of management of learning processes,allows for the child whose hearing is questionable by considering the processing of information which may be possible via an auditory input.

Emphasis on Perception

Perception is an over-used term and too often a vaguely stated one; however, as defined by D. O. Hebb, it is an extremely useful consideration. Hebb defines perception as everything that occurs between sensation and behavior. (Hebb, 1966) Used in this way, it allows focus on the mediating events or processes which occur between the time a signal is received and any expectation of appropriate behavior. Deaf educators certainly have spent energy and effort worrying about initial contact, the reception of sensory stimuli, and with good results. Our children most often have had the medical treatment they need to assure the fact that incoming signals are received as well as possible. They

have audiological devices to insure these signals will be amplified with minimal distortion, that they will receive the stimuli during all of their waking hours. (That there is no reality to these two statements for all of our children in the United States is a dismal truth which mandates further self-confrontation.)

A significant question becomes, what is this mediating process between stimuli reception and behavior? We do not know enough to give a complete answer but we do know enough to know where to begin. If a child is not using his hearing efficiently, if he does not listen or attend to clues which may be presented via the auditory mechanism, if he cannot attend to auditory stimuli or is not making efficient use of them, we would be wide to look at each part of the mediating process which occurs between sensation and behavior to insure we have not overlooked any part which may be an obstacle to learning.

To put this another way, it will be helpful to look at the children we must manage as those whose hearing efficiency most likely could be rated on a continuuum, a scale of effectiveness, rather than hearing described by categorical levels. Instead of thinking of a child as congenitally deaf, as hard of hearing, a child with a mild loss, a severe loss, a conductive impairment, a sensori-neural problem, as far as management of learning is concerned, let us consider instead the specific factors which make up the auditory processing system and then evaluate how each child is functioning in any one area, in all physical settings and with a variety of personal interactions. This would be one way to take a new look at the old problem of a child who does not respond to auditory signals. It will allow us to take a comprehensive approach to answering the question: Why?

Implement What is Known

With what we know about auditory processing today, it is naive to answer the question: Why can a child not hear? by responding, he cannot. Instead, our answer must consider such aspects as signal reception, signal analysis and acceptance, signal retention, signal synthesis and integration, signal convergence and divergence, etc. Within these broad categories, programming must include consideration of auditory localization skill, auditory scanning or attention, auditory monitoring or feedback, and a variety of aspects of memory or retention (delayed, immediate, meaningful for ideas, etc.) We must also consider the impact of auditory sequencing or temporal order and rate of presented material, auditory association, comprehension, and for some of our children, the creative uses of stimuli to which response may be made. (Guilford, 1968)

The deaf educator then, is considered as a management specialist and the child with an auditory impairment viewed as an agent who deals with information. Rehabilitative programs then can be developed in response to each aspect of the total management problem.

1. The physical settings in which the child is found at home in school, the playground, etc.
2. The interactions between the child and all humans with whom he is in contact
3. The organization of stimuli to which he is exposed
4. The processes through which learning takes place.

Attention to auditory processing is warranted as a first step in the total program as it is the area where we know intervention is necessary.

Summary

It can be profitable to think of each child with an auditory disorder as one for whom input is inadequate. The signal may be inadequate in intensity, it may be mutilated, distorted, or disorganized. Because of this the most fundamental need, for language, is influenced and therefore learning will be affected. Assuming that making up for a deficit by providing amplification, auditory training, and speech reading or providing mechanical aides or small classes has not proved to be sufficient. Instead, there is a need to enrich and develop excellence in each of the mediating processes which occur between an initial stimulus and subsequent behavior; to consider each part as well as the whole learning process. Total management is indicated for multivarious factors so that each child can learn to deal with infomration most effectively. Each aspect of a deficient system must be managed with authority and efficiency in order to facilitate maximum learning.

If, for example, following appropriate formal and informal testing confirming a child's inability to screen sensory impulses in order to select only a portion of the available stimuli while ignoring, suppressing, or inhibiting other stimuli, the deaf educator decides to focus programs on the development of auditory attention, systematic analysis of the management problem will mandate organization of materials and techniques to help a child develop this skill. The process for the child will be to help him attend to the auditory stimuli which the educator considers most important from a background of fleeting, instantaneous, and sequential auditory signals.

Programming will involve motivation to insure that certain competing stimuli come to conscious awareness. It will utilize all the information

psychological research has developed to help us know how to influence attention. Physical intensity, size, contrast or change in stimuli, repetition, motion, novelty, set, personal contact, have been cited as attention gaining and maintaining techniques; each of these can be programmed as part of the lesson plan. Further, since attention is a learned response, an important part of the program will be to reinforce children for attentive behavior.

It has been so easy to place the burden on the auditorily impaired child by saying he will not pay attention, to accept the fact that there has been no aural involvement even when he may have aural exposure. By implementing what we know about attention, deaf educators are challenged to devise interesting materials and techniques for presentation which are individually relevant for the experience and interest of each child. Poor attention or short attention span is not an explanation for a child's lack of progress. Most crucial to the question of a child's progress will be total management of his learning with individualized, personalized, and humanized programs to help each child reach his potential.

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